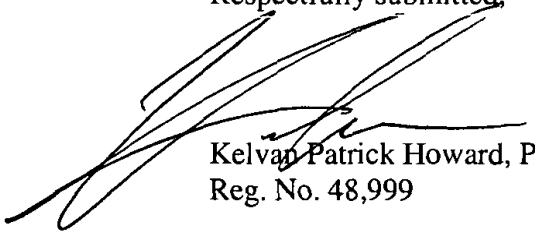
REMARKS

Support for claims 4-10 can be found in the specification beginning with paragraph 0065. Support for claim 11 can be found in the specification beginning with paragraph 0080. Support for claims 12-13 can be found in the specification beginning with paragraph 0096. Support for claims 14-15 can be found in the specification beginning with paragraph 0111. Support for claims 16-20 can be found in the specification beginning with paragraph 0122. No new matter has been added.

If the Examiner believes a telephone conference would expedite prosecution of this application, please call the undersigned at 415 490-2405.

Respectfully submitted,



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Appendix A

Marked-up Versions of Claims

Additions are indicated by underlining and deletions are indicated by ~~strikethroughs~~.

~~1. A method for characterizing the permittivity of a molecular event, the method comprising:~~

~~obtaining a first permittivity value for a test sample, the test sample comprising:~~

~~a known molecular event; and~~

~~a buffer;~~

~~obtaining a second permittivity value for a reference sample, the reference sample containing the buffer; and~~

~~computing the difference between the first and second permittivity values, wherein the computed difference represents the permittivity of the known molecular event~~

~~2. A method for detecting the presence or absence of a known molecular event in a test sample, the method comprising:~~

~~obtaining a first permittivity value for a reference sample, the reference sample known to either (1) contain the known molecular event, or (2) exclude the known molecular event;~~

~~obtaining a second permittivity value for a test sample suspected of containing the known molecular event;~~

~~computing the difference between the first and second permittivity values, wherein the similarity or difference between~~

~~computing the difference between the first and second permittivity values, wherein the computed difference represents the permittivity of the known molecular event.~~

~~3. A method for determining the relative difference between the permittivity of a test sample and the permittivity of a reference sample, the method comprising:~~

~~providing a detector configured to supply output parameters when the detector is electromagnetically coupled to a supplied sample;~~

~~defining one or more permittivity coefficients for the detector;~~

~~obtaining a first output parameter from the detector when the detector is electromagnetically coupled to a reference sample;~~

~~obtaining a second output parameter from the detector when the detector is electromagnetically coupled to the test sample;~~

~~applying the difference between the first and second output parameters to the one or more permittivity coefficients to compute the relative difference in permittivity between the test sample and reference sample.~~

4. (New) A method for determining the system-independent permittivity of a molecular event, the method comprising:

a.) providing a detection structure configured to produce output parameters when electromagnetically coupled to a reference or test sample,

b.) defining one or more permittivity coefficients using two or more calibration solutions,

c.) computing the difference between the output parameters obtained when the detection structure is electromagnetically coupled to the reference and test sample, and

d.) computing the permittivity of the test sample by applying the defined permittivity coefficients to the difference between the output parameters.

5. (New) The method of claim 4 wherein the detection structure comprises a detector, a resonant structure, or a non-resonant structure.

6. (New) The method of claim 4 wherein the output parameters produced by the detector comprise circuit measurement parameters, resonant frequency measurements, and quality factor measurements.

7. (New) The method of claim 4 wherein one of the calibration samples is the reference sample.

8. (New) The method of claim 6 additionally comprising the step of measuring the complex permittivity of the calibration samples.

9. (New) The method of claim 8 wherein the measurement is made over a range of frequencies that includes the critically coupled frequency of the resonator.

10. (New) The method of claim 9 additionally comprising the step of calculating real and imaginary permittivity difference quantities.

11. (New) The method of claim 10 additionally comprising the step of
a.) providing a resonant detector tuned to the critical coupling point of the reference sample,
b.) electromagnetically coupling the resonant detector to a calibration sample,
c.) obtaining the resonant detector's resonant frequency and quality factor measurements for the calibration solutions, and
d.) applying the permittivity difference quantities to the resonant frequency and the quality factor measurements of the calibration solution to compute the permittivity coefficients.

12. (New) The method of claim 10 additionally comprising the step of measuring resistance and reactance parameters.

13. (New) The method of claim 12 additionally comprising the step of applying the permittivity difference quantities to resistance and reactance parameters to compute the permittivity coefficients.

14. (New) The method of claim 10 additionally comprising the step of measuring real and imaginary components of an s-parameter measurement.

15. (New) The method of claim 14 additionally comprising the step of applying the permittivity difference quantities to the real and imaginary components of an s-parameter measurement to compute the permittivity coefficients.

16. (New) The method of claim 10 additionally comprising the step of measuring the permittivity of three calibration samples.

17. (New) The method of claim16 additionally comprising the step of measuring the output parameters for the three calibration samples.

18. (New) The method of claim 17 additionally comprising the step of deriving three bilinear calibrated coefficients.

19. (New) The method of claim 18 additionally comprising the step of measuring the reflection coefficient of the test sample.

20. (New) The method of claim 19 additionally comprising the step of applying the measured reflection coefficients to the bilinear calibrated coefficients to compute the measured permittivity.